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ABSTRACT

This study undertook to reconcile the views of cognitive and behavioral learning theorists on the issue whether learning without awareness (LWA) is possible, and if so, the circumstances under which it occurs. In Study One, two reinforcement procedures were compared in a structured verbal conditioning task. Study Two was a replication of Study One. In Study Three, an attempt was made to demonstrate LWA in another laboratory task, in which subjects were asked to make a series of choices among four different cards. Study Four attempted to demonstrate the generality of LWA through the use of a totally unstructured interview. It was concluded that LWA in laboratory verbal conditioning does take place under appropriate circumstances, when reinforcement appears to be a natural part of the situation and the subject does not have a learning "set". It appears that this phenomenon can also occur in a naturalistic setting. The findings support a behavioral rather than a cognitive approach to an understanding of verbal conditioning. (Author/KJ)

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FINAL REPORT

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A STUDY TO DETERMINE SOME EFFECTS OF LEARNING WITHOUT AWARENESS

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Pittsburgh, Pennsylvania

June 1970

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SUMMARY

This study undertook to reconcile the views of cognitive and behavioral learning theorists on the issue of whether learning without awareness (LWA) is possible, and if so, the circumstances under which it occurs. Working with the laboratory learning task of verbal operant conditioning, cognitive learning theorists have produced research to show that learning does not take place without awareness of the reinforcement contingency. However, evidence produced by behavioral learning theorists has suggested that LWA does occur if the subjects are relatively naive or free from learning "sets", and if the reinforcement is given in a natural and unobtrusive manner. A second aim of the study was to attempt to show generality for LWA beyond the setting of a structured laboratory verbal conditioning task.

In Study I, two reinforcement procedures were compared in a structured verbal conditioning task: the "mechanical" procedure typically used by cognitively oriented researchers, in which the experimenter responded to correct trials with "good" spoken in a flat tone, and a more "natural" procedure in which the experimenter responded with mm-hmm, good, fine, or OK, etc., whichever best fitted the particular context. Both reinforcement groups showed learning when compared to control groups, and unaware subjects in the natural reinforcement group also showed learning. Study II was a replication of Study I in which a sufficient number of aware and unaware subjects were obtained in both reinforcement groups to enable comparisons among subgroups. Only the aware subjects in the mechanical reinforcement group demonstrated learning, whereas both aware and unaware subjects learned as a result of natural reinforcement.

In Study III, an attempt was made to demonstrate LWA in another laboratory task, in which subjects were asked to make a series of choices among four different cards. The experimenter covertly reinforced a specific card choice, while the subject believed that a correct choice was being communicated to him by ESP. Learning occurred only in aware subjects; thus, no LWA took place in this situation. In Study IV an attempt was made to demonstrate generality of LWA in another way. A totally unstructured interview situation was employed, and an interviewer chatted for up to an hour with a series of subjects, trying to influence the topic of conversation toward a preselected area without revealing his intention to the subject. Careful analyses of the tape-recordings of these sessions suggested that LWA did occur, and that success depended largely on the natural skills of the interviewer. No quantitative data were obtained.

It was concluded that LWA in laboratory verbal conditioning does take place under appropriate circumstances, that is, when the reinforcement appears to be a natural part of the situation and the subject does not have a learning "set". It appears that this phenomenon can also occur in a naturalistic setting. The findings support a behavioral rather than a cognitive approach to an understanding of verbal conditiong.

INTRODUCTION

The question of whether learning can take place without a subject's awareness that he is learning something has long been debated. As early as 1933, Thorndike took a position on this issue, stating that learning occurs independently of awareness, but that a subject's awareness of the stimuli, his responses, the reinforcements, and the relationships that exist among these events may gradually develop after some learning has taken place. Bandura (1969, p. 565) has called this view the nonmediational or the behavioral theory of learning, to distinguish it from the mediational or cognitive view (Spielberger and DeNike, 1966), which considers that awareness in some form or other is a prerequisite for learning. (Two other views delineated by Bandura may be classified as variants of the behavioral or nonmediational theory.)

Support for the behavioral theory was offered by Lanyon (Lanyon, 1967a, 1967b, 1967c; Lanyon and Drotar, 1967), who showed that under certain specific circumstances, learning occurred in a verbal operant conditioning (VOC) situation in the absence of reported awareness, even after all reasonable efforts were made to "discover" awareness if it were present. However, a number of VOC studies, based on cognitive learning theory, have appeared to demonstrate that learning without awareness (LWA) does not occur, and thus that awareness is in fact a prerequisite for learning to take place. A careful examination of these studies led the present writer to identify certain critical procedural differences between the behaviorally and the cognitively oriented researchers in the experimental methods which they have employed. The major aim of the present project was to study these differences experimentally in order to reconcile the conflicting research findings.

If LWA is to have more than academic importance, the extent of its occurrence must be investigated. Verbal operant conditioning situations are but one highly restricted learning situation. A second aim of the project was to make a step in the direction of exploring the generality of LWA, by investigating its presence in two further learning tasks which involved verbal reinforcement.

Review of literature and related research

Origins of the "awareness" issue in VOC. A verbal operant conditioning (VOC) situation may be defined as one in which verbal or other social approval is delivered to a speaker following his emission of a specific class of verbal responses. An early study was that of Greenspoon (1955), whose subjects were requested to "say words," and who responded to each plural noun with "mm-hmm." Greenspoon demonstrated that conditioning occurred, i.e., there was an increase in the relative frequency of plural nouns as a result of the reinforcement.

One of the main reasons for the interest in VOC was to see whether the principles of instrumental or operant conditioning which had been derived from laboratory studies of animal behavior also applied to human verbal behavior (e.g., Cohen, Kalish, Thurston, and Cohen, 1954). In such a context, it would be invalid to include subjects who became aware of the purpose of the study. Thus, subjects who answered "yes" to post-experimental questions such as "Did you realize what the experiment was all about?" were excluded from the data. It should be pointed out that the term "awareness," as used in this application, refers to the subject's verbal behavior in response to a series of questions asked after the conditioning situation. Thus it is simply a convenient abbreviation for the longer phrase "positive verbal report of awareness," and is not meant to imply anything about the nature of the accompanying cognitive or mental processes.

Another body of VOC research grew from an interest in the possibility of utilizing VOC as a laboratory analogue of traditional dyadic psychotherapy. Here, subjects were generally given a discursive task, such as telling stories to TAT-like pictures (e.g., Krasner & Ullmann, 1963) or describing their childhood, as opposed to the more structured laboratory type tasks such as that of Taffel (1955). Researchers in this area also typically questioned their subjects about awareness, although it was not thought to be a particularly critical issue.

The cognitive view of awareness. As researchers became more experienced with the VOC paradigm of human learning, suspicions began to develop that the awareness variable was more important than previously supposed. For example, it was discovered that the more carefully the subjects were interviewed concerning their awareness, the higher was the proportion of subjects who were discovered to be aware. This suspicion led to the use of more formal and extensive questioning procedures, as in a study by Levin (1961) which showed that most subjects who learned also gave positive reports of awareness on a long and detailed post-experimental interview.

During the first part of the 1960's cognitive theorists produced a consistent flow of research which appeared to demonstrate that all learners were aware, and in fact that awareness was a prerequisite to learning in VOC. The theoretical framework within which these studies were designed has been spelled out by Dulany (1961) and by Spielberger and DeNike (1966). Criticisms have been offered by Maltzman (1966), Kanfer (1967), and Krasner (1965). The theory, however, is of less concern to us than the findings themselves, which are at variance with those of the present writer (Lanyon, 1967a, 1967b, 1967c; Lanyon and Drotar, 1967), and also with those of other behaviorally oriented investigations, to be summarized below. Since the majority of the data supporting the cognitive view of VOC (that learning is dependent upon and must be preceded by awareness) has been documented by Spielberger and DeNike (1966) and by Spielberger and Gorsuch (1966), it will not be repeated here.

The behaviorist view of awareness. Perhaps the more common orientation to awareness in VOC has been to regard it as a response which is conceptually independent of the degree of learning shown, but which may be related to some of the same variables that are related to learning. Kanfer (1967) has expressed the position in the following way:

> "The behavioristic position is characterized by the general assumption that the determinants of performance can be isolated experimentally without recourse to complex theoretical constructs. A Skinnerian view of self-reports in verbal conditioning studies regards them as verbal behaviors in their own right and subject to all the same variables as other behaviors. They differ from the conditioning response only in the discriminative (instructional) and historical stimuli controlling their emission. Self-reports cannot be given special status as indices of other events, any more than acquisition responses or any other observed behavior. Therefore, their validity is not questioned. These reports can only be treated as a dependent variable related to operation. Or if, indeed, they would be directly manipulated separately from performance, they could be viewed like other responses with cue properties, as independent variables affecting subsequent behavior" (1967, p. 34-35).

Krasner (1967) has also stated the behaviorist position clearly. In a discussion of a study by Dixon and Oakes (1965), he has stated that "...the positive relationship between awareness

and conditioning is due to opportunity to formulate and test hypotheses and that there is no necessary relationship between awareness and conditioning. When conditions are such that the subjects are unable to formulate their hypotheses, they condition equally well but it is unrelated to their awareness" (Krasner, 1965, p. 13). This position has also been referred to in earlier publications by the above writers and by Simkins (1963), Faber (1963), Southwell (1962), Lanyon (1967b), Verplanck (1962), and Rosenthal et al. (1963), among others.

What are the data to support the behaviorist view of awareness? Verplanck (1962) reported a series of studies in which he had subjects verbalize, after each trial in a two-choice card placement task, the rule they followed in making their choice. These studies showed that subjects who were consistently reinforced for making a certain "correct" choice tended to make more correct choices than correct verbalizations of their choice, whereas subjects reinforced for a certain "correct" verbalization regardless of their actual choice tended to make more correct verbalizations than choices. Although Dulany and O'Connell (1963) questioned Verplanck's findings on both logical and methodological grounds, it is likely that they have at least some validity.

In a study on experimenter bias in VOC, Rosenthal et al. (1963) utilized 18 examiners, half of whom were led to expect a high rate of awareness from their subjects, and half to expect a low rate. As anticipated, the high-expectant examiners obtained a higher awareness rate than the low-expectant examiners, even though questioning for awareness was conducted by a person other than the examiner in all cases.

Dixon and Oakes (1965) obtained support for the behaviorist position in another manner. Half of their subjects in a simple VOC task were given irrelevant activity during the inter-trial intervals between conditioning trials, in order to reduce the opportunity for the subjects to formulate hypotheses about the nature of the VOC task. The remaining subjects had no such interpolated activity. Dixon and Oakes found that both groups showed significant conditioning, but the former subjects reported less awareness of the response-reinforcement contingency.

Lanyon and Drotar (1967) investigated the effect of subjects' intelligence on LWA. High and low intelligent high school students were matched for degree of learning shown on a simple VOC task and then compared for awareness. Low intelligent subjects showed significantly less awareness than high intelligent subjects. In a second study, Lanyon (1967c) demonstrated LWA in

subjects who were selected and treated in such a manner as to minimize the likelihood that they would possess a set toward forming psychological problem-solving hypotheses. In this study, possible experimenter bias was controlled by leading the experimenter to expect results opposite from those actually anticipated.

In addition to the above studies which have directly supported the behaviorist viewpoint of VOC, a number of studies have given indirect support, in helping to delineate the conditions under which learning in VOC is most likely to be accompanied by awareness. The evidence can be regarded only as indirect, since these studies have not controlled for possible differences in degree of learning. Some of these conditions favoring more frequent reports of awareness are: clarity (as opposed to ambiguity) as to the nature of the task (Kanfer & Marston, 1961); similarity of alternative response choices (Kanfer & McBrearty, 1961; Marston, Kanfer & McBrearty, 1962); certain subject and examiner personality characteristics (Krasner & Ullmann, 1963; Epstein, 1964); availability of task information (Tatz, 1960; Krasner & Ullmann, 1963; Simkins, 1963; Kanfer & Marston, 1961); and type of subject (Buss, Gerjuoy, & Zusman, 1958).

Reconciliation of behaviorist and cognitive views. The discrepancies between the findings emanating from the behaviorist and the cognitive camps must be reconciled before satisfactory progress in this research area can be made. A survey by Lanyon (1967b), aimed in part at this problem, found that the cognitively oriented researchers had largely limited their experimental subjects to groups most likely to verbalize awareness, namely college students. Salzinger (1965) also helped clarify the situation by pointing out that cognitive psychologists have drawn their evidence almost entirely from structured tasks based on that of Taffel (1955), in which the number of members in the response class is highly restricted, and have ignored the more life-like discursive tasks. A third clue to possible differences was given by Krasner (1965), who pointed out that two types of reinforcement are possible. In the first, the experimenter simply says "good" in a mechanical manner. In the second, the reinforcement is given "naturally," and is regarded as inseparable from its deliverer. Here, the experimenter understands reinforcement theory and uses whatever behavioral cues he is comfortable with (head-nod, smile, etc.) in addition to emitting whatever word he feels is most natural at each particular time (good, fine, okay, mm, mm-hmm, yes, right, etc.). Cognitively oriented researchers have generally employed the mechanical kind of reinforcement, whereas behaviorists have usually employed the "natural" kind.

In the view of the present writer, the cognitive-behaviorist differences may be best reconciled within the behaviorist view of VOC. The empirical evidence discussed under the behaviorist heading above is entirely consistent with the viewpoint that awareness is more likely to occur when subjects formulate and test hypotheses about the VOC situation. Thus, subjects who are intelligent, who are interested in psychology, who are led to believe that there is something to be learned, who are given mechanical cues, who are asked during the conditioning trials for their hypotheses, or for whom the learning task is a simple one, are more likely to report awareness. And since cognitively oriented researchers have generally conducted their VOC studies under such conditions, their belief that LWA does not occur is entirely understandable.

Some other research in learning without awareness. In an extensive review of studies on behavior without awareness, Adams (1957) concluded that learning without awareness, in most senses of the term, still remained to be unequivocally demonstrated. Eriksen (1962) reported several studies and reached a similar conclusion, stating that where the questioning for awareness was careful and detailed, learning without awareness could not be demonstrated. Eriksen stated the same conclusion in an earlier review (Eriksen, 1960).

One instance of apparent learning without awareness was reported by Flanagan, Goldiamond, and Azrin (1959). These experimenters had several normally fluent subjects read from printed pages in the presence of a persistent shock, whose cessation was made contingent upon nonfluency. Nonfluency rate was shown to increase markedly. The subject for whom the changes were most marked was clearly unaware of the response-reinforcement contingency. He ascribed his nonfluency to his anxiety over inability to read simple passages, and declared that the shock was irrelevant to his behavior. Flanagan et al. also demonstrated that nonfluency could be manipulated by using as a contingent event the cessation of an annoying flicker from a fluorescent light.

Can it be shown that the experimental conditions in the studies reported by Eriksen (1962) were unfavorable for the occurrence of LWA? In the first study (Eriksen, 1962, p. 7), the subjects were college students presumably signed up from psychology classes, and were given a "learning set." A second experiment (Paul, Eriksen, and Humphreys, 1962) employed summer session college females, some of whom were psychology students, and put them through a very elaborate procedure for the avowed purpose of studying the effects of heat and isolation on psychological

processes. Although the real purpose of the study (to condition certain bodily movements by rewarding them with a 10-second blast of cool air) was not revealed, great care was taken to draw attention to the excessive heat and humidity of the environment and to the fact that cool air would be periodically blown into the experimental chamber. A third experiment (Eriksen, 1962, p. 9) is reported in insufficient detail for judgments to be made. However, it can be concluded that the other two experiments were conducted in such a manner as to reduce the probability of LWA. This conclusion is drawn from the fact that college students (mostly in psychology classes) were used, and that the settings and instructions were such that the subjects were likely to formulate hypotheses about the purpose of the experiment.

Some indirect support for the generality of LWA of overt (verbal or motor) responses can be gained from two additional sources. One is the work of Hefferline (1962) and others, who have shown that covert responses, such as microscopically small contractions of the thumb, can be conditioned without the subject's awareness. The other source is the recent work on the successful conditioning of autonomic responses, much of which has been summarized by Miller (1969). These studies, while concerned with different kinds of responses from those of concern in the present project, nevertheless add plausibility to the hypothesis that actual overt behavior can be conditioned without the subject's awareness.

Aims of the present project

The behaviorist interpretation of the place of the concept of "awareness" in VOC has some direct support in the studies documented above. However, one major aspect of this position has been as yet supported only indirectly; namely, the hypothesized difference between the effects of "mechanical" vs. "natural" reinforcement. A major aim of the present project was to demonstrate this difference. Thus, it was hypothesized that "natural" reinforcement in verbal conditioning would be more likely to lead to LWA than "mechanical" reinforcement. A second aim of the project was to demonstrate generality for LWA. Two laboratory situations were selected for study. The first involved a structured task in which subjects were to choose one out of four designs, making their choice for each trial on the basis of an extrasensory perception message purportedly being transmitted to them. In the second, a completely unstructured situation was employed, and the work was of an exploratory nature. Subjects were interviewed by an interviewer who planned in advance what he wanted the subjects to talk about, and who utilized his verbal and social conditioning skills in an attempt to achieve this goal. Evidence for LWA was sought in each of these two experimental situations.

METHODS

Study I. Relationship of Peinforcement Technique to Learning Without Awareness

Hypothesis

"Natural" reinforcement during a VOC task will lead to learning without awareness (LWA), whereas "mechanical" reinforcement will not.

Method

The experimental procedures employed were similar in many respects to those used in previous studies (Lanyon, 1967a, 1967b, 1967c; Lanyon and Drotar, 1967). In order to facilitate the occurrence of LWA, attempts were made to reduce the possibility of a "psychological set" in the subjects. Thus, subjects were college students who were not majoring in psychology, and the study was not identified to the subjects as psychological in nature. The study was conducted in a room in a large building immediately adjacent to the psychology department and to several other departments, so that the nature of the study was also ambiguous from this point of view.

Subjects. Subjects were 74 undergraduates (40 males, 34 females). They were recruited by means of notices placed at a number of central locations in the campus area, advertizing for research subjects to take part in a "scientific study" lasting less than one hour, for which they would be paid $1.50. Interested persons were asked to write their name and telephone number on the notice, and they were subsequently called to arrange an appointment.

Experimental task. There is some evidence that discursive VOC task leads to LWA more often than a structured task. However, many difficulties are raised by discursive tasks, the greatest among them being problems due to the great variability of response material obtained and the difficulty of keeping track of reinforcible responses. Even tape-recording the entire session and checking it later against a transcript (see Lanyon, 1967d) results in questionably adequate reliability. Thus, a structured VOC task was chosen because it was felt that the disadvantages of a discursive task outweighted the advantages. Stimulus materials were 80 3" x 5" cards, each tontaining a different past tense verb in the center and four pronouns (I, he, we, they) typed across the bottom in different random orders.

Subjects were assigned to one of four groups. Assignment was random, with the restriction that the two experimental groups (EN and EM) should contain 20 subjects each, and the two control (CN and CM), 15 subjects each. Four additional subjects who signed up were included, making 21 subjects for group EN, 16 subjects for group CN, and 22 subjects for group EM.

Group EN (experimental: Natural) was treated in the same manner as the experimental groups of Lanyon and Drotar (1967). Subjects were asked to make up a sentence to each card, beginning with any pronoun and using the verb some place in the sentence. For the first 20 cards, social approval was delivered on a predetermined basis--after the 1st, 3rd, 8th, 12th, and 18th sentences--in order to accustom the subject to the fact that the experimenter would respond from time to time. For trials 21-80 the social approval was systematically contingent upon the subjects' choice of the pronouns "I" or "we." Social approval consisted of whatever seemed most natural at the time to the experimenter--"good," "fine," "yes," "okay," "mm-hmm," head-nod, smile, etc. The experimenter was trained to be as natural as possible.

Group CN (control: natural) was treated in exactly the same manner as Group EN except that social approval was random throughout all 80 trials. Subjects in Group CN received approximately the same overall amount of social approval as subjects in Group EN; specifically, 9, 10, and 11 reinforcements during the second, third, and fourth blocks of 20 trials respectively. These figures were based on expectations derived from the previous studies already cited.

Group EM (experimental: mechanical) was treated in the same manner as Group EN, except for the following two conditions. (1) The experimenter said or did nothing in the way of social approval during trials 1-20. (2) For trials 21-80, social approval was delivered immediately after a sentence beginning with "I" or "we", but consisted simply of "good" spoken in a flat monotone. These conditions for Group EM thus approximated those utilized by cognitively oriented researchers in VOC.

Group CM (control: mechanical) was treated in the same manner as Group EM, except that social approval during trials 21-80 was randomly distributed. Once again, its amount approximately equalled the amount given to subjects in Group EM.

After the 80 trials, subjects in all groups were interviewed for awareness in another room by a second experimenter who did not know to which group any subject belonged. The interview schedule was similar to that previously used by Lanyon and Drotar (1967),

which was an extension of Levin's (1961) schedule, and was essentially the same as the written interview schedule reproduced in the description of Study II to follow. The interview first attempted to discover whether the subject was able to report spontaneously the connection between his behavior and the experimenter's; then small amounts of additional information were supplied to the subject so that the final question to the subject gave the information that reinforcement had been delivered for a choice of "I" or "we", and asked if the subject had become aware of that during the experiment. The interviewer wrote down the subject's responses verbatim. The main reason for having an independent experimenter conduct the post-conditioning interview was to avoid influencing the results of the interview by prior knowledge of what group the subject was in. However, it would have been possible for the interviewer to gain this knowledge in some instances if subjects reported that the experimenter had said only "good" (Group EN), or made a variety of responses (Group EM). In order to make it less likely that the interviewer would pick up this information, all subjects were interviewed, including the control groups. The interviewer was instructed to attempt no judgments about the subjects, but simply to write down their responses. The final question of the interview inquired whether the subject had any prior knowledge of this or similar experiments. No subjects answered this question affirmetively.

Results

The four groups showed large differences in their initial response frequencies of first person pronouns. In order to make the groups more comparable, extreme responders in the first 20 trials (fewer than 5 or more than 16 I-we responses) were discarded until the mean number of first person pronouns given during trials 1-20 was between 9.5 and 10.5 for all four groups. Where an arbitrary choice was posed, it was resolved by tossing a coin. Twelve subjects were discarded in this manner, leaving the Ns as follows: 19 (EN), 12 (CNO, 19 (EM), and 12 (CM). The mean numbers of first person pronoun responses for each block of 20 trials are given in Table 1. Also shown in Table 1 are the means for subgroups of aware and unaware subjects. The criteria for defining these subgroups are discussed later.

In Table 2 are shown the means and standard deviations of increases in first person pronoun responses from the first to the fourth block of 20 trials. Also shown are the differences in these increases between experimental and control groups, and the statistical significance of these differences. It can be seen that significant increases took place as a result of both kinds of reinforcement, and it can be concluded that learning occurred overall in both experimental groups. Comparisons involving subgroups of aware and unaware subjects are also shown in Table 2; these are discussed later.

Table 1

Mean Numbers of First Person

Pronouns in Each Block of Twenty Trials

For Experimental (Aware and Unaware) and Control Groups, Study I

Group	N	Blocks of Twenty Trials			
		1	2	3	4
Natural					
EN	19	9.89	10.79	11.93	12.74
EN Aware	4	11.00	12.25	14.00	12.75
EN Unaware	14	9.43	10.00	11.36	12.50
CN	12	10.50	11.58	12.92	10.83
Mechanical					
EM	19	10.26	11.68	13.63	13.89
EM Aware	12	10.33	12.00	14.08	14.25
EM Unaware	5	10.20	10.60	11.80	12.40
CM	12	9.75	9.83	9.75	10.75

Awareness. A judgment as to whether or not a subject was aware of the response-reinforcement contingency at the time of the experiment was made collaboratively by the writer and a second judge from the verbatim records of the interviews of subjects in the experimental groups EN and EM. These records were identified by the subject's name, and contained no information about group membership. Unequivocal designation as aware or unaware was possible in all but three cases, and these three subjects were removed from further considerations. Of the subjects in Group EN, 4/18 were classified as aware (one discarded); for Group EM; 12/17 were aware (two discarded). These ratios are significantly different ($\chi^2 = 8.2$; $p < .01$), indicating a greater degree of awareness among the Group EM subjects.

The major hypothesis of the study concerns the presence of learning among unaware subjects. Table 1 shows the mean number of first person pronouns for the 14 unaware subjects in Group EN and

Table 2

Mean Increases in First Person Pronouns Over Four Blocks of Twenty Trials, and the Differences in Increases Between Experimental and Control Groups, Study I

Groups	N	Increase Mean	Increase SD	Diffce. in increases	t	df	p*
Natural							
EN	19	2.87	3.10				
EN Aware	4	1.75	3.63				
EN Unaware	14	3.07	2.91				
CN	12	.33	2.48				
EN/CN				2.54	2.44	29	$<.05$
EN Aw./CN				1.92	0.63	14	-
EN Unaw./CN				2.74	2.47	24	$<.05$
Mechanical							
EM	19	3.63	4.99				
EM Aware	12	3.92	4.97				
EM Unaware	5	2.40	2.93				
CM	12	1.00	3.17				
EM/CM				2.63	1.77	29	$<.05$
EM Aw./CM				2.62	1.64	22	-
EM Unaw./CM				1.40	.80	15	-

* One-tail tests

also for the 4 aware subjects in that group. Similar figures are presented in Table 1 for the 5 unaware and 12 aware subjects in Group EM. As shown in Table 2, the mean increase in criterion responses from the first to the fourth block of 20 trials for the 14 unaware subjects of Group EN was 2.97, and this was significantly

greater than the corresponding increase of 0.33 for the control group CN. Thus it can be concluded that learning occurred among the unaware subjects in Group EN. The increase of 3.92 for the aware subjects in Group EM failed to reach the conventional significance level ($.10 > p > .05$) when compared with the corresponding increase of 1.00 for the control group CM. Concerning the 5 unaware subjects in Group EM and the 4 aware subjects in Group EN, these numbers are too small to utilize in statistical comparisons. Qualitatively, EN aware subjects increased 1.92 over their control group; EN unawae subjects 2.64. For Group EM, aware subjects increased 2.92 over their control group, and unaware subjects 1.40.

Discussion

The major hypothesis of the study was borne out; namely, LWA did occur when "natural" reinforcement was employed. Since this was a theoretically important finding, it was decided to replicate the study using a different experimenter. Replication was desirable also because of several minor limitations of Study I; namely, the large (though chance) discrepancies among the groups in initial level of I-we responding, the small size of the EN Aware and EM Unaware groups, preventing more complete comparisons, and the fact that the obtained significant differences were relatively small.

Study II: Relationship of Reinforcement Technique to Learning Without Awareness: A Replication

Hypothesis

"Natural" reinforcement during a VOC task will lead to learning among both aware and unaware subjects, whereas "mechanical" reinforcement will lead to learning only among aware subjects.

Method

The method employed in this study was the same as for Study I, except for the following modifications. It was decided to run 90 subjects; 30 each in Groups EM and EN, and 15 each in Groups CM and CN. If either of the experimental groups did not yield at least 10 aware and 10 unaware usable subjects further subjects would be run until this minimum criterion was reached. Subjects were once again to be discarded if they admitted prior knowledge of the experimental technique of if they gave fewer than 5 or more than 16 I-we responses in the first 20 trials. In this study, all subjects (including those in Groups EM and CM) were given social

approval following certain sentences during the first 20 trials. These were trials 1, 2, 4, 7, 9, 12, 13, 16, and 18--nine in all. Also, introductory psychology students were employed as subjects, and no attempt was made to hide the fact that they were participating in a psychology experiment. Such a procedure makes the study more directly comparable with previous research conducted by cognitively oriented researchers. In order to minimize the likelihood of prior knowledge, the study was run as near as possible to the beginning of the semester. At the end of the conditioning trials, the subjects in Study II were given a written rather than an oral questionnaire for awareness. This questionnaire, reproduced below, was arranged on several pages, in order that the subjects could not see what questions were to follow. Thus, questions 1-4 were on the first page, question 5 on the second, question 6 on the third, questions 7, 8, and 9, on the fourth, and the closing statement on the fifth.

QUESTIONNAIRE

We would like to ask you a few questions and get your reaction to the experiment. Brief answers are all we need: the questionnaire should only take you five minutes. If there is anybody else in this room, please do not communicate with them in any way.

Important: Please do not turn over a page until you have read and responded to all the questions on it.

1. How did you go about deciding which of the four pronouns to use?

2. What do you think was the purpose of the experiment?

3. During the experiment did you notice anything in particular about the experimenter's behavior?

4. While you were in the experimental room, did you think the experimenter was trying to influence you in any way? (We want to know what you thought <u>then</u>, not what may have occurred to you just now.)

NOW TURN OVER

5. The experimenter sometimes said "good" or gave some other indication of approval. <u>At the time</u>, if you noticed it, what did you think his purpose was?

NOW TURN OVER

6. Actually, the experimenter was trying to influence you in a subtle way. While you were in the experimental room, did you know what he "wanted" you to do?

NOW TURN OVER

7. The experimenter was trying to influence you to pick a certain type of pronoun as often as possible. At the time of the experiment, while you were going through the cards, did you have any idea what it was? If so, what?

8. During the experiment, to what extent did you figure out what the experimenter "wanted" you to do? Check one of the following statements:

___ I had no idea there was a "correct" choice of pronouns.
___ I thought there might be a correct choice, but I really didn't know what it was.
___ I guessed it could possibly be the pronoun or pronouns I mentioned above.
___ I thought it was that choice but I couldn't be absolutely sure.
___ I was certain of the right pronoun choice.

9. Before you participated in this experiment, did you have any knowledge of this kind of paychological research? If so, what?

Now that you have answered the questions, you have seen that the experimenter was investigating the influence of subtle interpersonal cues on your behavior, and was not really concerned with how sentences are made up. In order for us to find out what we want to know in this experiment, it is extremely important to us that you should not mention anything about the experiment to anybody, even people who you might not think likely to take part in it, until the end of the semester.

Thank you very much for your cooperation. Leave this questionnaire on the table, face down, as you go out.

Results

It was found that the initial 90 subjects were sufficient to meet the criterion of group size. Two of these were discarded because they indicated prior knowledge of VOC studies, gained through reading ahead in the textbook. A further 5 subjects were discarded because of extreme responding on the first 20 trials, leaving 83 subjects in the study. The experimental design

called for assignment of subjects to groups without regard to sex. Groups EM and CM contained between then 24 males and 18 females, and Groups EN and CN contained 20 males and 21 females. Awareness was judged from the written questionnaires collaboratively by the writer and a second judge. It was possible to classify everybody unequivocally as aware or unaware.

Table 3 shows the number of subjects retained in each group, and the mean number of I-we pronouns given in each block of 20 trials, including the means for subgroups of aware and unaware subjects. In Table 4 are shown the means and standard deviations of increases in first person pronoun responses from the first to the fourth block of trials, the differences in these increases between experimental and control groups, and the statistical significance of these differences.

Table 3

Mean Numbers of First Person Pronouns in Each Block of Twenty Trials for Experimental (Aware and Unaware) and Control Groups, Study II

Group	N	Blocks of Twenty Trials			
		1	2	3	4
Natural					
EN	28	9.46	9.43	11.07	11.06
EN Aware	13	10.15	9.85	10.69	12.85
EN Unaware	15	8.87	9.07	11.40	10.94
CN	13	9.77	9.85	9.92	9.77
Mechanical					
EM	28	11.29	10.93	11.93	12.68
EM Aware	11	10.82	11.64	13.36	13.82
EM Unaware	17	11.59	10.47	11.00	11.83
CM	14	10.00	10.71	10.71	10.29

Table 4

Mean Increases in First Person Pronouns Over Four Blocks of Twenty Trials, and the Differences in Increases Between Control Groups and Aware and Unaware Experimental Subgroups, Study II

Groups	N	Increases Mean	SD	Diffce. in increases	t	df	p*
Natural							
EN Aware	13	2.77	2.38				
EN Unaware	15	2.07	2.79				
CN	13	0.00	3.09				
EN Aw./CN				2.77	2.46	24	.05
EN Unaw./CN				1.78	1.78	26	.05
EN Aw./EN Unaw.				0.70	0.69	26	-
Mechanical							
EM Aware	11	3.00	3.50				
EM Unaware	17	0.24	2.57				
CM	14	0.29	2.91				
EM Aw./CM				2.71	2.00	23	.05
EM Unaw./CM				-0.05	-0.05	29	-
EM Aw./EM Unaw.				2.76	2.16	26	.05

* One-tail tests

Of the Group EN subjects, 13/28 were classified as aware, and of the Group EM subjects, 11/28. These proportions are not significantly different.

Turning now to the comparisons shown in Table 4, it can be seen that both aware and unaware subjects in the "natural" reinforcement group increased their I-we pronoun production significantly when compared with control subjects. In the "mechanical" reinforcement group, only the aware subjects showed such learning. One further comparison can be made, between the increases shown by unaware subjects in each experimental group. The mean difference in the increases is 1.83, and this is significant beyond the .05 level (one-tail), indicating that naturally reinforced unaware subjects showed a larger increase in criterion responses than mechanically reinforced unaware subjects.

Discussion

The results of Study II confirm and extend those of Study I. Once again, unaware subjects given natural reinforcement were shown to have learned, and in addition, their increase was greater than that showed by subjects given mechanical reinforcement. These findings give direct and unequivocal support to the behavioral or nonmediational view of verbal operant conditioning.

The obtained proportions of unaware subjects should be noted. In Study I, natural reinforcement resulted in significantly fewer aware subjects than mechanical reinforcement, but this was not the case in Study II. The difference might be accounted for in part by the fact that in Study II, all subjects were responded to by the experimenter during the first 20 trials, while in Study I, Group EM received no responses whatever until after trial 20. The latter procedure would seem to be the more likely to produce awareness, since the experimenter's sudden verbalizations seem much more demanding of an explanation than if he has been responding from the very beginning. This hypothesis would account for decreased awareness in the EM subjects. A possible reason for overall increased awareness is that the subjects, being psychology students, had a "set" in this direction, as has been hypothesized a number of times in the past. Finally, it is becoming more apparent to the writer that there are substantial differences among experimenters in their verbal conditioning techniques, and that these differences will persist no matter how carefully training is carried out. For this reason, the experimental technique of choice in the future might be simply to have the experimenter become aware of his natural skills and to attempt to enhance them in whatever manner suits his personality best. The recent report by Rosenfeld and Baer (1969), in which LWA was demonstrated in a series of individual case studies, supports this viewpoint.

The next two studies reported explore the generality of LWA. In Study III, a laboratory situation is chosen that is different in nature from the traditional verbal operant conditioning task, and an attempt is made to demonstrate LWA. In Study IV, a rather different approach is taken. Based on the writer's increasing conviction that the ability to produce LWA in a respondent is to some extent a function of certain interpersonal skills, a series of completely unstructured interviews were held, in which the interviewer attempted to explore, utilize, and enhance his skills in this direction. These interviews were tape-recorded and carefully analyzed.

Study III. Generality of Learning Without Awareness: ESP Study

Hypothesis

LWA can be demonstrated in subjects who are verbally reinforced for a certain response in an experiment which purportedly tests their extrasensory perception ability.

Subjects

Subjects were 50 undergraduates who were enrolled in an introductory psychology course, and who participated as part of the course requirement. Originally it had been planned to utilize non-psychology students because it was felt that psychology students would be suspicious of an ESP experiment. However, pilot subjects recruited from the introductory psychology course showed such obvious belief in the legitimacy of the study that such subjects were utilized for the entire study. As a matter of interest, it has been shown by previous investigators that college students will participate without question in studies purportedly investigating ESP.

Method

Subjects were ushered into an outer room and were read the following introductory statement on ESP.

> "The experiment in which you are about to participate is concerned with the demonstration of extrasensory perception. Historically, this phenomenon has been associated with mysticism, but recent work by Dr. Joseph Rhine at Duke University has brought the scientific method to bear on the investigation of ESP. The results of Rhine's work in the parapsychology lab.

at Duke University have shown, among other things, that the ability to receive messages without use of regular sensory reception is directly related to high intelligence, good social and emotional adjustment, and strong motivation."

After the reading of this paragraph, the subject was introduced to a "confederate" who was also present. The confederate was introduced as the ESP "sender", a person selected for his ability to transmit ESP messages. The sender, a male with shoulder-length hair, hippie clothing, and an unusual manner, smilled, said nothing, and retired to an adjacent room. The experimenter and subject went into an adjoining booth, where they were seated at opposite sides of a table. On the table was a signal lamp which was connected to a hidden timer set to regulate the lamp "on" for three seconds and "off" for one second in a continuous cycle. The following instructions were then read to the subject.

"The procedure is quite simple. Here is a deck of cards. There are four different kinds of cards in the deck, identified by a star, a plus, a circle, and a square. The sender will concentrate on a card. You, the receiver, will try to identify the card and tell the experimenter, who will record it. The cards which the sender picks are drawn randomly from a very large number, which means that neither the order of the cards nor the amount of times each card appears can be predicted."

"In order to eliminate the possibility of the sender communicating with you in some sensory way, he is located in another room. The only way that he can communicate with you is by means of a light. When he is looking at a card he will turn the light on. He will turn it off between cards. Thus, when you see the light come on, try to identify the card the sender is looking at, and identify it by saying: star, plus, circle, or square."

"While the message is not likely to be clear, research has indicated that it is best to name the first card which comes to mind after the light goes on. Again, we should warn you that unless you are a particularly talented receiver, you may feel some of the time that you are not receiving any message at all."

When the subject indicated that he understood the instructions, the experimenter pressed a switch which ostensibly signalled to the sender to begin sending, but which in fact activated the timer and caused the signal lamp to begin its sequence. The experimenter recorded each card named by the subject, and gave "natural" social approval, as defined in Study I, after responses 2, 5, 10, 14 and 17, regardless of what card was chosen. Starting at response 21, social approval was given only if a response of "circle" was chosen. When 60 cards had been named, the experimenter pressed the switch to terminate the signal light. The subject was then ushered back to the outer room and handed the following awareness questionnaire. As in Study II, the questionnaire was arranged so that subjects could not see what questions were to follow. To accomplish this, questions 1-3 were on the first page, 4 and 5 on the second, 6 on the third, 7 and 8 on the fourth, and the explanatory note on the fifth.

QUESTIONNAIRE

We would like to ask you a few questions and get your reactions to the experiment. Brief answers are all we need; the questionnaire should only take you five minutes. If there is anybody else in this room, do not communicate with them in any way.

Important: Please do not turn over a page until you have read and responded to all the questions on it.

1. To what extent do you believe that ESP is a real phenomenon? Give your answer by checking one of the following statements.

___ Yes, absolutely
___ I think so, but I'm not sure
___ I honestly don't know
___ I don't think so, but I'm not sure
___ Definitely not

2. Have you ever felt that you possessed any ESP ability?

3. In the experiment, did you think that you picked up any sensory (as opposed to extrasensory) cues at all, from any source at all, as to which card was the right one?

NOW TURN OVER

4. During the experiment did you notice anything in particular about the experimenter?

5. While you were in the experimental room, did you think the experimenter was trying to influence you in any way? (We want to know what you thought then, not what may have occurred to you just now.

NOW TURN OVER

6. Actually, the experimenter was trying to influence you in a subtle way. While you were in the experimental room, did you know what he "wanted" you to do?

NOW TURN OVER

7. The experimenter was trying to influence you to pick a specific card as often as possible. At the time of the experiment, did you have any idea what it was? What?

8. How certain were you then, that you knew the specific card? Check one of the following statements.

___ I had no idea there was a specific card.
___ I thought there might be a specific card but really didn't know what it was.
___ I guessed it could possibly be the card I mentioned above.
___ I thought it was that card but couldn't be absolutely sure.
___ I was certain of the right card.

NOW TURN OVER

Now that you have answered the questionnaire, you have seen that the experimenter was investigating the influence of subtle interpersonal cues on your behavior, and was not really concerned with ESP. In order to find out what we want to know in this experiment, it is extremely important to us that you should not mention anything about the experiment to anybody, even people who you might not think likely to take part in it, until the end of the semester.

Thank you very much for your cooperation. Leave this questionnaire on the table, face down, as you go out.

Results

The mean number of circle responses per block of 20 trials is given in Table 5 for control and for experimental subjects. On the basis of the awareness questionnaires, subjects were classified collaboratively by the writer and a second judge as aware or

Table 5

Mean Numbers of "Circle" Responses made in Each Block of Twenty Trials for Control and Experimental Groups

Group	N	Blocks of Twenty Trials 1	2	3	4
E	25	5.32	5.68	5.60	6.00
E Aware	13	5.15	5.54	5.92	6.31
E Unaware	12	5.50	5.83	5.25	5.58
C	24	4.71	5.21	5.33	5.17

unaware of the response-reinforcement contingency. Unequivocal classification was possible in all cases, and 13 of the 25 experimental subjects were classified as aware. Means for aware and unaware experimental subjects are also given separately in Table 5. T-tests evaluating the increase in criterion responses from the first to the fourth block of trials for each group (and the subgroups) showed that no group demonstrated a significant increase. Since the mean response level of "circle" for the first 20 trials of the control group was somewhat lower than for experimental subjects, extreme scorers were discarded (as in Study I) until each of these two means was approximately 5.0. Five subjects were discarded in this manner, two from Group C and three from Group E. The adjusted means are given in Table 6. Mean increases from the first to the fourth block of trials are given in Table 7, together with comparisons between these increases. From these tables it can be seen that the mean criterion response level increased over the four blocks of trials for the experimental group as a whole, and that this was due entirely to the increases shown by the aware subjects. Comparisons of increases with those of the control group showed a trend toward significance for the aware subjects, and there was also a trend toward a greater increase for aware subjects than unaware subjects.

Table 6

Mean Numbers of "Circle" Responses Made in Each Block of Twenty Trials for Control and Experimental (Total; Aware and Unaware) Groups, Equated for Response Level on The First Twenty Trials

Group	N	Blocks of Twenty Trials			
		1	2	3	4
E	22	5.05	5.64	5.50	5.95
E Aware	11	4.82	5.64	6.00	6.45
E Unaware	11	5.47	5.64	5.00	5.36
C	22	4.96	5.36	5.36	5.23

Discussion

These data, if regarded in the nature of a pilot study, suggest that there would be no significant learning by unaware subjects in this situation. There are several possible reasons for this failure. First, it is noted that the subjects gave only single word responses, as compared to whole sentences in Studies I and II. It might be that this difference served to emphasize the problem-solving aspects of the situation in Study III. A more likely possibility for inhibiting LWA in that in Study III the subjects were specifically informed that there was a "correct" response on each trial. These instructions would serve to alert subjects to a problem-solving orientation in which LWA would be unlikely to occur. Thus, the essential difference in methodology between Studies I and II and Study III is that in the latter, subjects were informed that there was something to look out for, in the nature of a message or a manipulation, whereas in the former two studies no information of this kind was given.

Table 7

Mean Increases in "Circle" Responses Over Four Blocks of Twenty Trials, and the Differences in Increases Between Control and Experimental (Aware and Unaware) Groups

Group	N	Increase Mean	Increase SD	Diffce. in increases	t	df	p*
E	22	.90	2.08		1.98	21	< .05
E (Aw.)	11	1.63	2.61		2.07	10	< .05
E (Unaw.)	11	.09	1.17		.26	11	-
C	22	.27	1.14		1.12	21	-
E/C				.63	1.22	42	-
E Aw./C				1.63	1.58	31	-
E Aw./E Unaw.				1.54	1.71	20	-
E Unaw./C				-.18	-.45	31	-

* One-tail tests

Study IV: Verbal and Social Influence Without Awareness in a Totally Unstructured Interview Situation

The first three experiments which were conducted utilized highly structured laboratory situations, in which "naturalness" of the experimental task was sacrificed in order to facilitate quantification of the subject's responses and application of statistical analysis procedures. Two important elements were felt to be lacking in these studies. The first concerns the problem of generalizing from the laboratory situation to real-life behavior. There are two aspects to this problem: (1) the behavior studied is irrelevant to real life insofar as these contrived situations

do not occur in real life, and (2) the listener in real life does not provide the systematic and careful reinforcement that is provided in the laboratory studies. The second element, related to the first, refers to the meaningfulness of the interpersonal experience for both speaker and listener (subject and experimenter). Whatever advances are to come for the applied educational and learning process from LWA studies, the ultimate application will be in a meaningful interpersonal interaction. With these thoughts in mind, it was decided not to proceed with the originally planned final study using another contrived laboratory situation from which one would hope that the findings would generalize to the real world, but to base the study in the actual real-world situation in which it would be directly meaningful. Such an approach means a departure from the statistical design and experimental rigor, and at the present limited state of knowledge, the approach must be tentative and exploratory.

It was decided to select a social-interpersonal conversation situation for study. A series of "subjects" would participate in conversation with the "experimenter," who would deliberately try to turn the conversation to a preselected topic, without being so direct as to make the subject aware of his plan. Any form of social-interpersonal influence was permitted for the experimenter. Each entire conversation would be tape-recorded for later study. At the end of the conversation, the experimenter would ask a series of questions in the nature of an awareness interview, designed to discover whether the subject was in fact aware of the attempted influence. After each session the experimenter would make notes about his recollections of what he was trying to accomplish at various times during the conversation. Each tape-recorded session would then be played back in the presence of the experimenter and a second independent listener, who would note the experimenter's recollected comments and make his own judgements as to what the nature of the interaction seemed to be. No statistical results would be extracted; rather, the study would yield hypotheses and insights about the nature and degree of success of interpersonal influence without awareness.

Method

The study was conducted in the psychology department in a carpeted room furnished with comfortable chairs. Subjects were eight females from an introductory psychology class, who participated as part of a course requirement. Females were chosen deliberately in order to maximize the possibility of interpersonal influence by the experimenter, a male. The experimenter held a masters degree in counseling and possessed a greater than average amount of social-interpersonal skill. The topic to which the conversation was to be turned was selected by the interviewer

during the first few minutes of the interview. Subjects who participated were under the impression that they were taking part in an ordinary conversation to study the process and nature of conversation.

The eight interviews ranged from 40 minutes to one hour in length. After the entire conversation, including the awareness inquiry, had been recorded, subjects were fully informed of the purpose of the study and were encouraged to ask any questions they wished.

Results

Results are presented in the following manner. One representative interview is selected for full examination (the complete transcript of this interview is given in Appendix A, in which lines are numbered for reference). Then general comments are made and conclusions are drawn concerning all eight interview sessions. It should be remembered that the interview analyses were based on the introspection of the interviewer while listening to the interview tape with the present author.

The interview which is examined, with a subject to be called V, lasted 55-60 minutes. In the transcript, one minute is represented by roughly 12 lines. The first 33 lines were spent in having V identifying herself, and by this time the interviewer had decided on the plan of manipulating V into talking about him, the interviewer. His tentative plan was to talk briefly about himself in a general way, and then to encourage V to talk about him in somewhat more personal detail. He predicted that the natural course of events would then be for V to show an interest in personal details about him, and this would provide him with an opportunity to employ operant reinforcement procedures in order to encourage this line of conversation.

Following the above plan, in lines 35-120, the interviewer briefly mentioned his interest in psychology, and then encouraged V to discuss her own education. At line 123, the interviewer made a premature effort to turn the topic of conversation to himself, but then permitted V to retain the center of interest (line 136). At line 167, the interviewer made a second attempt to begin moving the conversation toward himself, this time somewhat more subtly, by re-introducing the subject of psychology but still allowing V to remain the center of interest. At line 233, V suddenly and spontaneously responded by turning the conversation on to the interviewer and the interview procedure. The interviewer was somewhat taken aback, and spent several minutes in trying to find some appropriate way to take advantage of the apparent fact that V was offering to be structured in just about any way he wished.

At line 268, he formulated to himself the idea of utilizing role-playing in order to turn the conversation toward him. After debating the feasibility of this strategy and delivering to V a little "pep talk" to encourage her to participate (lines 294-306), the interviewer decided it was worth trying, and initiated it at line 231. After about seven minutes it became evident to the interviewer that he had succeeded in his task, and he abruptly changed the topic of conversation from himself back to V (line 395). During the succeeding 10 minutes (to line 511), the interviewer listened to V's "role-played" problems, but found himself becoming involved as a real counselor (around line 500). Upon recognizing this he once again attempted to turn the conversation back to the topic of himself. This was again successful up to a point for about 9 minutes (line 610), but had to survive two attempts by V to turn the conversation back on to herself (line 560; line 571). At V's third attempt (line 610), the interviewer decided to bring the conversation to a close and initiate a general inquiry to test for V's awareness of his manipulation. Curiously enough, it was V's conviction that there were manipulations, but that they were designed to keep the topic of conversation focused upon her! She appeared to have no awareness that the goal was in fact the exact opposite.

Discussion

The interview with V illustrates all the important points gained from analyses of the other interviews, although not always in the most striking manner. First, persons usually prefer to talk about themselves, and in an interaction which has any aspects of a social interchange, they will generally work in this direction, Second, the interviewer's rather obvious manipulation of having V role-play a counselor in order that he could legitimately talk about himself was misinterpreted by her, and it appears that she viewed it as training for her in some manner or other. Third, when the social interchange became "genuine," at least in the interviewer's perception, he found that he had temporarily forgotten his goal and was participating on a different level -- that is, he was acting as a genuine counselor. Fourth, it was apparent that the interviewer's interpersonal skill in handling the situation was an important factor in the success of any conditioning that occurred. Fifth, although there were no quantitative data in this study, the interviewer and the author were reasonably satisfied that LWA could be considered to have taken place in all of the interviews.

CONCLUSIONS

The first main question posed in this project has been answered in the affirmative: learning without awareness (in a verbal conditioning situation) does indeed occur. The reinforcement must appear to be a "natural" part of the interaction, and precautions should be taken to minimize the probability that the speaker (or subject) has a "set" to form hypotheses about the nature of the situation. The results of Study IV suggest that learning without awareness can also occur in an unstructured social interaction situation, and that in this case the success of conditioning will depend considerably on the natural skill of the interviewer (conditioner) in this area. Thus, it can be concluded with some degree of confidence that people learn verbal behavior as a result of the reinforcing verbal and social behaviors of others, and that they may not be aware that this learning is taking place. These findings support the behavioral rather than the cognitive theoretical learning viewpoint.

The project did not progress as far as hoped in exploring the generality of learning without awareness, although the findings with respect to verbal behaviors were extended from a structured laboratory situation to a more naturalistic setting. The results of Study III could be interpreted to confirm previous findings that learning without awareness is unlikely to occur if the subject is aware that there <u>is</u> something to be learned.

The general conclusion that learning without awareness does indeed occur cannot be overemphasized. Thus, persons need not be aware of what they are learning, or even that they are learning anything at all. It is likely that the less any situation resembles a typical learning situation, the less awareness there will be of any learning that does take place. The findings are consistent with the common notion that people learn unconscious attitudes and prejudices in situations where they are not aware that they are acquiring any knowledge.

An interesting question for further study is whether knowledge acquired without awareness is amenable to "unlearning" through conventional teaching methods, or whether more indirect methods are necessary. The latter position would be reminscent of, though not entirely consistent with, the viewpoint of psychoanalysis, in which learned conflicts of which the patient is not aware can be dealt with satisfactorily only through complex indirect learning methods.

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APPENDIX A

VERBATIM TRANSCRIPT OF AN UNSTRUCTURED "MANIPULATIVE" INTERVIEW

E: Okay?

S: Okay?

E: First of all, the natural thing is what's your name.

S: [S gives her name]

E: And uh what's your major?

S: I don't have a ... Liberal Arts.

E: And when do you expect to graduate?

S: 72.

E: Are you a freshman?

S: Mm-hmm.

E: And how old are you?

S: I just turned nineteen.

E: Congratulations.

S: Hmhh.

E: And your phone number?

S: [S gives her phone number]

E: Mm-hmm.

S: Is that all?

E: Yeah. Does it bother you?

S: No.

E: Um. And your address?

S: [S gives her address]

E: How do you spell that?

S: Char-

E: Mm-hmm.

S: tiers.

E: Okay, that takes care of the formalities.

E: Now, you saw a notice up on the notice board and you signed up for it and--what was it--"Students interested in Clinical Psychology."

S: I don't know.

E: You don't remember. Why did you sign up for it?

S: To put in time.

(Both laugh.)

E: That's probably the best reason for signing up for something. Well, do you know anything about Clinical Psychology?

S: Huh-uh.

E: Do you know ...

S: It's connected with medicine. Right?

E: Uh. Okay. Yeah. You're taking psychology 80 now?

S: Yeah.

E: Have you gotten to anything that has to do with clinical psychology in Psychology 80?

S: No.

E: Well, tell me what you've been doing in Psychology 80 then.

S: Well, um, motive ... motivation and animals and people, sleep, hunger, thirst, y'know ... all that.

E: Mm-hmm. And uh oh very, very, very, very generally, clinical

S; Oh.

E: ... to human beings. We learn about what happens to animals and people in experimental settings and you sort of say, "Well, that happens, and maybe it's a principle of behavior and we'll try it out with people in real applied situations. And Uh--I don't know---maybe you've thought of how you apply some of like what you have in Psych 80 to y'know real human beings. Like, what are-- what are you really interested in?

S: I like uh the part about personality. We haven't hit that yet.

E: Yeah. It's mostly clinical.

S: Is it?

E: Well besides ... Okay. Go ahead.

S: Well, like you know, neuroses and that. I think it's interesting.

E: Why?

S: Oh, I don't know. I just think if you knew a lot about the human mind, it would really be y'know. But maybe that's not so good because you'll go around analyzing everybody y'know. Maybe it's better you don't know about them.

E: Maybe. (Laughs) I don't know. What are you really interested in besides psychology and that's not your major and you haven't picked your major.

S: Oh, I like languages and oh like the arts 'n that.

E: What are the other courses your're taking?

S: Uh, English, geography, and history.

E: And psychology?

S: Mm-hmm.

E: Which one do you like the best?

S: Uh, I like English and psych. the best. Oh, I don't know, I always liked subjects that deal like--I was always better in subjects that deal with reading.

E: Mmm.

S: Y'know, not like math 'n ...

E: Yeah. Yeah.

S: I just can't do that. I don't have any ability for math. But reading--I don't know--I just seem to get more out of that, and if it's interesting, I like it. I like writing, but when it comes to like math and chemistry, I just hate it.

E: You taking French?

S: Mmm.

E: Do you speak French?

S: Well, I was exempt, but I wanted to take it anyway. See ...

E: So you took it anyways?

S: No.

E: ... or you took a more advanced course?

S: They wanted to put me in French 30, but I can't understand it. So I'm kinda stuck. They won't put me in anything besides French 30 because I'm exempt, and French 30's above my head.

E: Oh, so you didn't take it?

S: Huh-uh.

E: Oh, I see.

S: So they told me to sit in on a French 4 class and they were above my head. I should really be in like French 2 or 3. I don't know how I got exempt.

E: Yeah, I was just gonna ask you that. Howcome?

S: I only had three years in high school. I don't know. I guess I'm just lucky.

E: Well, you ...

S: I'm a lucky guesser.

E: Well ...

S: I think it was in the placement--no--the achievement test maybe ... I don't know.

E: So that means you don't have to take any French or foreign languages in school at all?

S: No. No. But I like--I mean I'm better in that than some other things so I want to take it.

E: Est-ce que vous parlez francais un peu?

S: Do you speak French a little bit?

E: That's very good.

S: Is that what you said?

E: You should be exempt.

(Both laugh.)

S: Oh, that's really hard.

E: Yeah. That's very good. Do you have mostly speaking French in---or grammar.

S: You mean in high school?

E: Yeah.

S: Well, the teacher I had y'know--you really had to learn grammar pretty good. But like speaking--she didn't emphasize pronunciation too much--it was just y'know grammar 'n y'know writing, but it wasn't wrong. Like we didn't have to speak it like French people.

E: That's a real pain in the neck. You know with all the masculines and feminines and ...

S: Yeah ... Yeah.

E: Oh boy, I had ten years of French.

S: Ten years.

E: Which was an awfully long time.

S: Ten years?

E: Yeah.

S: What did you have in high school?

E: I ah, well, we took French all through high school.

S: That's four years.

E: Yeah.

S: And then six years in college--you had French?

E: Um, no. I had--in public school, we had it from grade three to grade seven.

S: Third grade?

E: Yeah.

S: That's the kind of people that were in French 30.

E: Yeah. (Laughs)

S: I didn't know what I was doing and there was a girl that had had it since second grade.

(Both laugh.)

E: Well yeah. And then two years of college.

S: Oh.

So ... (together)

S: That's people that should be language exempt--not me. I don't know what happened. I just got a general idea y'know.

E: What are the other things you can become exactly?

S: I don't know ... Just ...

E: Well, what are the requirements like for--are you taking a general degree, or liberal arts or something?

S: Oh, I'm going to try to decide on a major by next term. See what I do good in. I was thinking of writing maybe, or maybe going into another language like Spanish or something and take that.

E: Don't you have any y'know uh requirements that you have to take just to get your degree--any required courses?

S: Credits?

E: Yeah.

S: Oh yeah.

E: Like what?

S: English.

E: Are you taking that now?

S: Yeah. Um, I know you have to have English and a language unless you're exempt.

E: What about mathematics?

S: No.

E: Have to take any math?

S: I hope not ... I don't think ... well for a liberal arts degree, I don't think. I hope not.

E: You have to do a little in ... psychology.

S: Oh ... that's it ... I like it.

E: You have to do a little ... statistics ... Major in psychology?

S: Yeah, I think it'd be interesting.

E: What would you do if that's what you did?

S: Oh ... well don't they use them like in personnel?

E: Yeah.

S: Things like that?

E: Yeah.

E: Personnel work?

S: Yeah.

E: Do you know anything about it?

S: No.

E: (Laughs.) You ever taken tests like personnel people would give? Psychology tests?

S: Um. Yeah. I think.

E: What did you take?

S: In school, I think. Is that like they measure your abilities like how you did mathematical abilities and like that?

E: Yeah.

S: I think I've taken them. Well, they give us this psychology test y'know the first week. It was like um personal questions y'know.

E: Like what?

S: Do you get depressed a lot? And do you make friends easily? One of those kind of tests. And I had them in high school.

E: How'd you have to answer that?

S: Um. I think it was ...

E: Agree or disagree or true-false or ...

S: Either yes or no.

E: Yes or no?

S: Yeah. Maybe a couple of y'know in between, but most of them were yes or no.

E: Were there a lot of them? Like 500 or ...

S: I don't think 500. I think there were maybe 60 or a 100.

E: What did you think of that.

S: Uh.

E: You're scrunching up your nose.

S: Huh? I ...

E: You're scrunching up your nose--like that.

S: Well, I figure that--I don't think that half the questions people answer true anyway.

E: (Laughs)

S: I thought--I didn't.

E: You didn't, eh? Well, you were faking it?

S: A couple parts.

(Both laugh)

E: Did you fake it to look good or to look bad?

S: Yeah, I try to be--be like consistent.

E: Yeah. They have the same questions over again or ...

S: No, they word them differently. They try to trick you.

E: You found that out though, huh? Well, you must be very smart then.

(Both laugh.)

E: People--people work for years and years and they try to figure out tests that you won't be able to fake.

S: Well, like uh I didn't really fake y'know. Well they had this question like um "I lie a lot." You know, and then later on they'd say, "I tell the truth all the time."

E: Mm-hmm. Abe Lincoln said--I remember this because I remember Abe. He said that no one's really smart enough to be a liar and I was wondering you know when they give those kind of tests where they can really remember where, you know, if say how you answered the last question ..... You didn't have any trouble with that though, huh?

S: No.

E: I guess you're smart.

S: No.

E: Yeah.

S: What's the purpose of this? Is it just to um ... What is it?

E: Just to talk and see what ha-pens when you ... tape-record. That's all the purpose it is.

S: Just that I get to talk?

E: Mm-hmm.

S: Oh.

E: Can you think of any purposes for it.

S: Maybe to see how people--like you get them talking about themselves ...

E: Mm-hmm.

S: And like--like people.-- like when I walked in you know...

E: Yeah.

S: ... I was kinda y'know--I didn't know what to do y'know.

E: Yeah.

S: Like a little bit shy, I guess you could say.

E: Yeah.

S: But when people start asking questions about yourself, right away, you start .....

E: You think so?

S: Mm-hmm.

E: Do you feel it sort of..... when people start asking you about yourself?

S: Well, it depends what it is. Like, if I don't really know the answer, I get kind of tongue-tied.

E: Well, what if you don't want to give the answer. Say someone asks you something personal that y'know maybe you wouldn't want to.

S: Yeah.

E: What else do you think this thing could be for?

S: Um.

E: No clues? ... Well, there's nothing else you really want to say then?

S: Um. I don't know.

E: Make up something.

S: Well ...

E: Well you make up one thing so y'know ...

S: ... to see how much people reveal about themselves in talking?

E: Mm-hmm.

S: ... about themselves?

E: Could we ... y'know ... Do you think that's a good idea--have people--try to get them to do this sort of thing? Do you think that most people would really do that?

S: Well, I don't know. I think that most people keep their deepest thoughts inside. They never let them out.

E: Say that was the purpose of this thing--okay--y'know.

S: Yeah.

E: To see how much people would reveal about themselves, what would you--of course, assuming you know all this now, What would you do?

S: Probably be a little on my guard maybe. Y'know.

E: Would you want to walk out?

S: No. No. Huh-uh.

E: Well, y'know, say that when you signed up, y'know because you're interested in clinical psychology. Part of clinical psychology is very concerned with things which people keep to themselves a lot--in psychotherapy where they're finding out a lot about people's personalities and things like that in order to help them. And say this was structured in a way that, well, if you really want to find out about clinical psychology or you're interested in clinical psychology, what we're going to do is we're going to have a therapy session. Allright? And so you're going to come in and be all upset. And

I'm going to try to help you be unupset. Okay? Well, that's another way of--it is in fact ... Don't get all upset. Well that's another thing that it could be. Do you think that'd be a good idea to try?

S: Make people get upset and then try to help them?

E: No, no, no. (Laughs) Have people come ... everybody's a little upset, y'know. Everybody's a little uptight and have everybody come in with their little uptightnesses and say well what I'm hung up on-- and so if I want to know something about clinical psychology, this is the way of finding out. It's a kind of difficult thing to explain. Umm. Let's see, it's kind of difficult to explain in words if you don't experience that kind of thing. Like, for example, if we sort of changed positions--right?--and you were like the person who was here and I walked in from Psych 80. Now, I'm a Psych 80 student and that was really the experiment that was going on--to have people come in--and who-- y'know, everybody has hangups. You have a person come in, "See, I have this problem and would like to talk to you." Well how would you know whether I was really faking it?--or y'know really did have a problem which was bothering me.

S: I guess you really couldn't.

E: Well, how would you try to find out ... if I just act like this. "I really have a problem," and I just stand there like this.

S: Well, it would probably come out while he's talking ... maybe he wouldn't come right out and say "I have a problem--it's this, this, and this." He'd say "I feel this way when I'm in this situation and I don't know what to do about it." Y'know, he wouldn't come right out and maybe ...

E: Okay. Well, do you think it could--would you ask any questions?

S: Oh yeah.

E: Okay, you pretend that you're me ...

S: Okay.

E: And I'll pretend that I'm you and we'll both pretend that that was the purpose of this whole business. Okay?

S: Okay.

E: I have a problem.

S: Um. (Laughs) I wouldn't laugh. What is it?

E: Well, I can't tell you.

S: Why?

E: It's personal.

S: Well, can you tell me what it's about?

E: Well, um, it's about me.

S: About you? Is it a problem about school?

E: Well, partly.

S: A certain subject?

E: Well, ah, more school in general.

S: Social?

E: Oh yeah, that's more.

S: Um.

E: I don't want to talk about it though.

S: Is it about a certain person?

E: Well, it might be.

S: I see. How long has it been bothering you?

E: Oh, for awhile.

S: Well, how can I help you?

E: I don't know. You're supposed to be the professional .....

S: Yeah. (Laughs) I can't think of any questions.

E: Like you're supposed to help me--help me make me feel good.

S: You have to help yourself.

E: Okay.

S: I can help you help yourself.

E: Okay, let's do that.

S: Well, first of all, let's talk about it--get it out.

E: Well, are you really interested?

S: Yes.

E: You're really not. You're giggling.

S: Oh. No I'm not.

E: You're trying to keep a straight face. Well um, you're right. It's about school and it's about y'know like another person and um, well where do you want me to start.

S: Well, the first time you noticed this problem--the first time it started bothering you.

E: Well, the first time it started bothering me was um, um, let's see, um, in November.

S: November, and what happened?

E: Uh, well, I got very nervous and very um upset--uptight and neurotic.

S: How did you know?

E: Well, my friends told me. (Laughs) My friends told me.

S: What do you think's the cause?

E: My girlfriend.

S: Your girlfriend?

E; Mm-hmm.

S: Umm, were you going steady?

E: No.

S: No?

E: Well, y'know, I didn't give her a ring or something like that.

S: And so she went with someone else?

E: No.

S: You didn't give her a ring? So she still dates you?

E: Well, she's in Montreal--not here.

S: She's in what?

E: She's in Montreal.

S: Oh. ... Well, what seems to be the problem if you date?

E: Well, we can't date too much because uh--well no--because she's there and I'm here.

S: So you don't get to see her very much?

E: No.

S: This made you nervous?

E: No. No. See, actually, I'll tell you. She wants to get married.

S: Well why's that make you nervous? If you love her ...

E: I--I don't want to get married.

S: Do you love her?

E: Oh yes.

S: Well, do you have the money?

E: No problem.

S: Well then, maybe you really don't love her--because if you really did, you'd marry her as soon as you could. Maybe you really don't want to face it--or come out with it.

E: Hmm. Maybe you're right. Maybe that's how I can help myself help myself. Okay, that's the kind of role-playing thing that would happen. Right.

S: Yeah.

E: Okay.

S: That's fun.

E: That's fun? Okay, I'll tell you what. Let's do the reverse then. Okay, you'll pretend that you have a problem or something like that.

S: You know what I noticed on T.V. and everything that y'know psychologists and psychiatrists and that, when they come in, whenever they talk, they never--when there's a question, they always answer it with a question.

E: Oh my God! Is that what you were doing?

S: Most of the time.

E: Well, I didn't even notice that. ... Um, do you think you can help me? I'm asking you a question.

S: Oh, how do I--you wouldn't answer that with a question--no.

E: Well, so ask yourself a question and answer it with a question.

S: Un ... well ... like if I could find a problem, like I'd know where to start--y'know--like what's it about and all kinds of questions.

E: Well, let's see how I do--back to the game. Okay? Then ...

S: Oh. I don't have a problem though really.

E: Make one up.

S: Make one up?

E: If I can make one up, you can make one up.

S: That's hard ... I don't really have a problem, I don't think.

E: Well, we'll pretend. Okay.

S: It's true.

E: It's true? Okay.

S: Mm-hmm.

E: You have something true that is bothering you?

S: Mm-hmm.

E: Well, what is it?

S: I don't have any ambition.

E: You don't have any ...?

S: Ambition.

E: Ambition?

S: Mm-hmm.

E: So, what's wrong with that?

S: Well, most people in college have a little ambition or they wouldn't be there. But I mean, I just don't have any um well--I mean I want to go, but it's not like oh I have to get a degree. I have to get a Masters. I'm just coming to learn y'know.

E: Mm-hmm.

S: See how good I can do. But I don't have any pressure on me to come or get good grades. That's all up to me.

E: Mm-hmm.

S: But like if I don't do good, I'm not going to worry about it. If I do good, I'll be happy, but I'm not really one of those kind of kids that goes around y'know, "Oh, I have to get an A."

E: What um kind of grades did you get last semester?

S: I wasn't here.

E: Howcome you weren't here?

S: Because I was sick.

E: Oh, I'm sorry to hear about that.

S: Um, I was here for a week.

E: Hmm. You started--when--the beginning of the semester, and then you got sick?

S: I got mono.

E: You got mono? That's a no-no.

S: Well, I've come back again and try again.

E: Mm-hmm. Are you taking the same courses that you were taking the last time?

S: Not exactly. Same idea. So ... I got a late start for one thing.

E: Yeah.

S: Well, I--I feel like ... never really become a part of this college. Maybe because I commute--I don't know.

E: Mm-hmm.

S: And so like, I come and do what I have to do and I'll leave.

E: You have friends down here?

S: Very few. I just came y'know. Um.

E: What about girls and guys from the high school you went to?

S: A few. I still keep in touch with them. Like I have a lot of good friends where I live and I have a boyfriend and--oh I don't know. It does make a difference y'know. And like I'm not really that interested in the social things. Y'know, if you're not interested in social things and you're not interested that much in school things, then y'know.

E: You think you're happy?

S: I'm a little undecided. Like I don't know if it's a mistake or not. If I should be in an office--if--where I should be--or if I should be in another kind of school. But I guess everybody has that kind of problem. They're not sure about that.

E: Hmm. I don't see what's wrong with you not having any ambition if you feel kind of happy and--and content yourself.

S: I am. Like maybe it's better to be this way than to have pressure and to have parents that are forcing you like into medicine or something like that or to get the grades. It's just on my own.

E: Actually, you're in a very good position, y'know.

S: Hmm?

E: Well, if you think of it this way--that you come into school and you don't have--well "ambition." I guess you have to be fairly ambitious to go to the university anyways because ah ... it's not the easiest thing in the world. There are other things in life to do that are much easier than going to school. But if you don't have the pressure from ambition, then that's good because you have the whole world--wide world open to you and you'll see--maybe you'll like y'know psychology--maybe you'll like--maybe you'll like French. (Laughs)

(Both laugh)

E: Or maybe you'll like--maybe you'll really find out that the thing you really like is mathematics.

S: Well, I'd like to see that day.

E: (Laughs) Now--and the thing that you could do now is explore all the different outlets and that's a really fun thing to do y'know--without the pressure on you to do it.

S: Yeah.

E: You could talk to people who are doing these things. I talked to someone who was interested in becoming a librarian. I said, "Gee, what's interesting about being a librarian?" Before she walked out of here--boy, I was all excited about becoming a librarian. The things she was telling me about y'know the new things that are happening in library science and how you have to know the areas around you. You work with people; you work with books; and that's interesting to her, but ...

S: Maybe sombody else just wasn't ...

E: Yeah! But, so she came in contact with it and became interested. So maybe you'll find something interesting ..... solve the problems of the world; do you think that kind of ..... interaction is a useful one? Do you think that this is a real problem of yours that you were upset about

S: Mm-hmm.

E: You saying what you said and me saying what I said were helpful at all?

S: Yeah. It helped me a little bit. Like I was all worried about maybe there was something wrong with me. I thought like everybody else was like--had their nose in the books and ...

(Both laugh.)

S: ..... not so much now.

E: Some people do, y'know.

S: Not so much now, but that was my first impression. They were either all for the books or all for the social life.

E: Mm-hmm.

S: Y'know one or the other, um, um, and I wasn't either one. Mm-hmm.

E: Yeah.

S: But I thought, y'know well maybe I don't belong here.

E: Mm-hmm. Well, everybody's got to find their own thing and yours may be different than--look--say it's different that mine. Y'know, I spend a lot of time studying. I got ambition. I've also got pressure. And um--how many years ago--seven years ago--eight years ago now when I was in your position ...

S: Eight years ...

E: I had ...

S: Graduate school?

E: Yeah. I had zero ambition.

S: Did you?

E: I went to school and um so I took--we had to take more required courses than you did--so there was more pressure. We had to take two years of French, two years of Latin, and six years of English and so now I speak French, English, and Latin, y'know, which doesn't help me much with psychology. But, um, y'know so there was a little more pressure I guess. But I had no ambition at all, y'know.

S: But then it just came? And you were interested in school? Or did you have to find something which you were interested in?

E: Well ... um ... it wasn't 'til after I graduated-- after I got my B.A.-- that I became interested in something. I got my M.A. in education which ...

S: Education?

E: Yeah. Sort of go in different direction and in that I became interested in psychology so I turned around and went the other way.

S: Did you teach for awhile?

E: No. Not that kind of education. I was in--in special education.

S: Oh.

E: And more dealing with things that are not in the classroom--recreation, administration, some camping, counselling.

S: Oh, I worked last summer in the playground.

E: Um, a playground camp?

S: Well, y'know--the city. Oh those kids. But I stayed outside ... y'know.

E: Mm-hmm. I've been in camp for almost all my life--in the summertime.

S: Oh, that would be nice.

E: Yeah, I really enjoyed it, y'know, you get like you say work with--I really like working with kids. They're so much fun.

S: They are.

E: They're so much more honest than adults, y'know, and uh to work with other people in that kind of a situation. I really liked it.

S: I know like--well I'd tell a lot of people and that and like working down there and--I couldn't stand it 'n ... But really, like I complain a lot about those kids and that, but really like I like them. Y'know, there's just something about them. Like, I wasn't trying to ... and a lot of them are colored and they didn't really have much 'n they're always wanted your attention, y'know, and its a shame y'know. They didn't get it at home. Y'know like you could get them interested in something. It'd make them happy. It really made you feel good ... But maybe I'll go into something like that because I do like working with kids 'n ... There's just so many things I just don't know what to do.

E: The whole world is open to you. I know it's tough--making a decision--because that commits you. But I'm committed. You're not committed yet but I am. And once you're committed, you--you have pressure too. Keep on working for something. Do you think I was bothered--do you think it would bother me--the pressures--after you made the commitment?

S: Bother you? Umm. The pressures? Not really. No.

E: Do you think, after sitting here all this time talking to me that I'm the type of person that I'm the type of of person that would be bothered by the pressure of ...

S: No you don't seem to be that type of person. You can really laugh--calm. Like I don't think you'd ever break under any kind of strain. I think you'd just take it.

E: Well, what's there about me that would make you say something like that?

S: Why--don't you seem calm?

E: Well, what makes you think I wouldn't break under pressure?

S: Well, I think you've been under a lot so far-previously to it.

E: Well. Okay?

S: Well, all those years you must have been under the pressure most of the time. Maybe when you first started out, it really bothered you but now you probably just take it in stride ... I'm sure.

E: What about the pressure for y'know--you don't have any now--what about high school--the pressure of getting into college and everything--examinations and everything and studying?

S: Uh, at the time, y'know, it really bothered me. Y'know, and after it was all over I felt real relieved--when it was all over. 'n I'm the type of person--I save everything to the last minute--I've always been that way. So I have all this pressure built up before a test. Instead of spreading it all out--'n I always save it 'n then after it I feel so good ... 'n then I don't have that pressure on me.

E: Cram before exams?

S: I always do.

E: Do you do well on those exams? cramming?

S: Well, I've only had really one test so far--psychology.

E: Oh, you mean you're still cramming in college now?

S: Yeah. Oh. I still ... That's no good. I'm trying to get away from that.

E: Yeah, you should because ... well I guess some people work better that way.

S: I think I do--because I forget half that stuff.

(Both laugh)

E: I think that's a very good argument for cramming.

S: It's there for one day anyway. The next day it's gone. But it's there for one day.

E: Well, I suppose when you really get interested in something, you--you--it stays in your head for a longer time.

S: Well, if its something I like, I'll start early. If it's something I hate, I'll put it off.

E: Why do you think we've been talking for the thirty or forty minutes we've been talking?

S: Just to ah--I don't know. Maybe to see how some people--how people y'know, can be at ease with a strange person. I don't know.

E: You think I was trying to influence the conversation?

S: Yeah.

E: How?

S: Well ... well, what do you mean? It was mostly about myself.

E: About you?

S: Yeah ..... but most about me. Well, I felt like saying things y'know--how I felt about school--what I'm doing.

E: Mm-hmm. Do you think I was purposely leading into things or did we just sort of talk?

S: Talk. I mean--I don't think it was like you had it written down''like "First talk about this," and I think it just sort of happened that way. Like I think you had an idea.

E: Mm-hmm.

S: But you don't had it all written down.

E: Who do you think we talked about more?

S: Me.

E: Do you remember talking about me?

S: Mm-hmm.

E: What did we talk about then?

S: You told me how much French you took; that you graduated from college eight years--no--that you started college eight years ago; pressure bothered you; you were in recreation; you were in education and you switched to psychology; you've spent all your summers in summer camp ...

E: Yeah.

S: ... you like little kids ...

E: Yeah.

S: ... you think they're honest ...

E: Mm-hmm.

S: ... didn't have any ambition in the beginning; that came later once you did pick what you wanted; you were committed to it.

E: Mm-hmm. Do you remember anything else?

S: No.

E: Okay.

S: Pretty good?

E: Mm-hmm. It's not an intelligence test.

S: No. I know that, but, I mean ... did I leave something big out?

E: Do you think I'm looking at you like you did leave something big out?

S: Yeah.

E: You remember the role-playing?

S: Yeah.

E: What do you remember about it?

S: Well, at first, I was like the person--the psychologist--and you told me your problem--you mean about the problem?

E: No. I just want to know what you remember about the role playing.

S: That's it. And then you asked me ah questions and I told you about my problem ...

E: Mm-hmm. Okay.